

An Unusual Ant Nest Morphology for the Ant *Formica fusca* Linne in Western Oregon¹

(Hymenoptera: Formicidae)

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The perturbation of soils by ants has long been recognized. Surficial ant nests developed in soils are generally conical - or crater-shaped mounds. I have observed large ant nests in western Oregon which have a cylindrical morphology that has not to my knowledge been previously reported.

These indurated soil structures (Fig. 1) seen in the Willamette Floodplain Natural Research Area of the William L. Finley National Wildlife Refuge in Benton Co., Oregon (T13S, R5W, Section 28), are developed on an uncultivated Dayton silt loam (Typic albaqualf, fine, montmorillonitic, mesic) which shows distinct mottling at 5 cm depth, indicative of poor drainage. Standing water is frequently seen on this site during the winter, high rainfall period. The density of ant galleries is greatest in the inner portion of the cylinder, and the inhabiting ants were identified as *Formica fusca* L., the silky ant common across sub-arctic Canada and the northern half of the contiguous United States.

The structures observed are up to 50 cm high and 130 cm in circumference, and support grasses rooted in both the top- and side-walls. Excavation of several of the nests failed to reveal any cylindrical precursor which may have acted as a template for the construction. The high areal density of these nests became apparent following an experimental vegetation burning trial in 1976 (Fig. 2). As many as 106 nests/1000 m² have been observed in the burn area. However, similar nests are seen in the adjacent undisturbed area.

Formica fusca is known to nest in soil, under logs and rocks and in wood (Wheeler and Wheeler, 1963). The earthen mound nests of this species are generally low relief structures. Wheeler and Wheeler (1963) report *F. fusca* earthen mounds in North Dakota to measure from 15 to 150 cm in diameter but only 10 to 12 cm in height. Wiken *et al.* (1976) have described low conical structures developed by *F. fusca* in a well-drained gravelly loam in southwestern British Columbia. The elevated nest structures observed on this Willamette Valley site are probably adaptations to the poorly-drained nature of the area, with the upper portion of the mound affording the inhabitants shelter from the periodic flooding of the lower reaches of the nest. In addition,

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Fig. 1. Ant nest (each unit on scale is 10 cm). Vegetation on side-walls has been trimmed to show nest structure. Fig. 2. Distribution of nests on the landscape.

such nesting structures may provide for a more favorable temperature regime than found in the adjacent soil (Cole, 1932; Scherba, 1962).

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